

REMARKS

Entry of this amendment as well as reconsideration and allowance are requested.

The Examiner's continued indication that claims 7-10 and 18-20 include allowable subject matter is appreciated.

Claims 1-6 and 11-17 remain rejected under 35 U.S.C. §103 for obviousness based on USP 5,410,715 to Ishimoto and USP 6,081,867 to Cox. This rejection is respectfully traversed.

The Examiner admits that Ishimoto fails to disclose that "a priority of a given active interrupt handling program is alterable whilst said given active interrupt handling program is started and uncompleted." In the first response, Applicants also pointed out several other distinctions with respect to Ishimoto and Cox. However, the Examiner requested that those distinctions be more specifically described in the claims.

Accordingly, the independent claims have been amended to clarify that the nested interrupt controller controls pre-emption of plural—not one—active interrupt handling programs that are started and uncompleted by a pending interrupt handling program. Those claims have also been amended to recite that "a priority of a given active interrupt handling program is *alterable whilst said given active interrupt handling program is started and uncompleted such that a currently executing interrupt handling program does not have a highest priority of said plurality of active interrupt handling programs.*" Thus, the claims recite more than just changing the priority of an executing and uncompleted interrupt. This added language makes clear the issue that neither of the prior art documents even recognizes. Namely, with a plurality of active interrupt handling programs and alterable priorities, it is possible that a currently executing interrupt handling program does not have the highest priority of the plurality of active interrupt

handling programs being controlled by the nested interrupt controller. The inventors recognized this problem of a "trapped," high priority, nested interrupt and provided a solution where a nested interrupt controller permits or prevents pre-emption by a pending interrupt handling program based upon a comparison with the highest priority associated with any of the plurality of active interrupt handling programs "as determined with respect to all of said plurality of active interrupt handling programs." This last quoted clause was added at the Examiner's suggestion in order to further highlight this distinction. In this way, a new interrupt request is either dealt with immediately or queued for attention ("nested") depending on whether its associated priority level is higher or lower than the highest priority level of all the currently nested interrupts.

As the Examiner admits, pending interrupt priorities are not altered in Ishimoto. In Ishimoto's system, it is only necessary for the priority of a new interrupt request to be compared with the currently executing interrupt because pending interrupt requests nested behind the currently executing interrupt are of lower priority by definition. Consequently, interrupts cannot be "trapped" in the system of Ishimoto. Hence, Ishimoto does not disclose, and would have absolutely no reason to contemplate, determining whether to permit/prevent a new interrupt request preempting a nested stack of pending interrupts by a comparison of its priority "with the highest priority associated with any of [the nested stack of interrupts]" as recited in paragraphs (i) and (ii) of claim 1. Ishimoto has only one comparison to make between the priority of the new interrupt and the priority of the currently executing interrupt (see column 7, lines 30-52).

Cox, like Ishimoto, operates on the principle of a constructed hierarchy of interrupt priorities. The circuitry of Figures 3A and 3B ensures that whichever interrupt has the highest priority is the currently executing interrupt. Thus, neither Cox nor Ishimoto ever recognizes the currently-executing interrupt as anything other than the highest priority interrupt.

Accordingly, the proposed combination Ishimoto and Cox, even if it could be made, simply teaches performing a priority comparison for a new interrupt request with the one currently executing interrupt. Neither describes making any other comparison with other plural nested interrupts. They clearly do not teach permitting a pending interrupt handling program to pre-empt [or permit pre-empting] a plurality of active interrupt handling programs "if a priority associated with said pending interrupt handling program is higher [or less than] than a highest priority associated with any of said plurality of active interrupt programs." This is not surprising given that Ishimoto and Cox both fail to address the problem with which the claims are directed—let alone the claimed solution to that problem.

Because the claim amendments clearly overcome the prior art rejection and put the application in condition for allowance, Applicants believe entry of this amendment is appropriate under MPEP 714.12. An early notice to that effect is requested.

Respectfully submitted,

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